ABSTRACT

A method and apparatus for transmitting a clear voice signal while effectuating speech privacy and unobtrusiveness through adaptive signal processing; includes a voice input microphone, an electrical line for transmitting representations of the received voice signal from the microphone and having a modulator in it, actuators or speakers spherically disposed about the microphone for creating sound canceling the ambient spatial transmission of the voice inputted into the microphone, an adaptive signal processor for receiving from the transmission line before the modulator the representations of the received voice signal from the microphone and for providing appropriate output to the actuators or speakers for them to create sound canceling the spatial transmission of the microphone inputted voice and to the modulator to remove from the transmission line downstream of the modulator the speaker sounds signals picked up by the voice input microphone. Far-field sensors spherically arranged about the speakers detect how well the speakers reduce the voice spatial transmission and input the adaptive signal processor accordingly. The signal processor contains an adaptive signal processing algorithm which adjusts the signal characteristics for each individual cancellation actuator over time. Since the voice is cancelled in close proximity to the mouth piece of the phone when the invention is incorporated in a phone, the signal processor is used to introduce into the ear-piece of the phone the person's voice in order for the person to hear his or her own voice.